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(54) **MULTIPLE RESONANCE SAMPLE COIL FOR MAGIC ANGLE SPINNING NMR PROBE**

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(57) **ABSTRACT**

A multiple resonance sample coil for a magic angle spinning nuclear magnetic resonance probe is comprised of a solenoid coil that resonates at low frequencies and a resonator that resonates at high frequencies. The ends of the low frequency solenoid coil are electrically connected to the high frequency resonator to eliminate arcing and allow the solenoid coil to extend the full width of the resonator. In some embodiments, the high frequency resonator is constructed from the outermost turns of the solenoid coil in the form of a birdcage resonator. In another embodiment, the solenoid coil is electrically connected to one turn of the resonator and the other turn is used as part of a trap to shunt the resonator at low frequencies.

4 Claims, 9 Drawing Sheets